National Institute of Environmental Health Sciences

Rurality of communities and incidence of stroke: A confounding effect of weather conditions?

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Abstract:

INTRODUCTION: An urban-rural gap in stroke incidence or mortality has been reported. However, whether the effect of rurality on stroke is independent of the distribution of conventional individual-level risk factors and other community-level risk factors is inconclusive. METHODS: A cohort study was conducted involving 4849 men and 7529 women residing in 12 communities throughout Japan. Baseline data were obtained between April 1992 and July 1995. Follow up was conducted annually to capture first-ever-in-life stroke events. During that period, geographic, demographic and weather information was obtained for each community. Multi-level logistic regression analysis was conducted to evaluate the association between stroke incidence and each geographic/demographic factor adjusted for meteorological parameters (temperature and rainfall), in addition to individual-level risk factors (age, body mass index, smoking, total cholesterol, hypertension, and diabetes). RESULTS: Throughout an average of 10.7 years' follow up, 229 men and 221 women with stroke events were identified. In women, low population (odds ratio [OR] per 1000 persons 0.97; 95% confidence interval 0.94-1.00), low population density (OR per 1/km2 0.85; 0.74-0.97) and high altitude (OR per 100 m 1.18; 1.09-1.28) increased the risk of stroke independently of individual-level risk factors; however, significance was absent for all three associations when further adjusted for weather parameters. Conversely, the association between each meteorological parameter and stroke in women was significant, even after adjustment for each of the three geographic/demographic factors. Similar results were obtained for cerebral infarction. CONCLUSION: The association between living in rural communities and stroke may be caused by the confounding effect of weather conditions in the communities studied.

Source: http://www.rrh.org.au/articles/showarticlenew.asp?ArticleIDEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)1493

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Rural, Urban

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Japan

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect

Cardiovascular Effect: Stroke

Population of Concern: A focus of content

Other Vulnerable Population: Rural populations

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified